

Claims:

1. A welding unit (27) including a welding apparatus (1) with a welding torch unit (29) connectable thereto via a hose pack (23, 28), wherein at least one control device (4), a welding current source (2) and optionally a wire feeder unit (30) are arranged in the welding apparatus (1), wherein the welding torch unit (29) is formed by at least two separate welding torches (10, 35) intended to carry out at least two independent, separate welding processes, characterized in that the first welding torch (10) is configured to carry out a welding process and at least a second welding torch (35) is configured to carry out a cold-metal transfer welding process with a forward-backward movement of a welding wire (32), and that a device for synchronizing the welding processes carried out by the at least two welding torches (10, 35) is provided.
2. A welding unit (27) according to claim 1, characterized in that the first welding torch (10) is comprised of a MIG/MAG welding torch.
3. A welding unit (27) according to claim 1, characterized in that the first welding torch (10) is comprised of a WIG welding torch.
4. A welding unit (27) according to claim 1, characterized in that the first welding torch (10) is comprised of a plasma burner.
5. A welding unit (27) according to claim 1, characterized in that the first welding torch (10) is likewise designed to carry out a cold-metal transfer welding process.
6. A welding unit (27) according to claim 1, characterized in that the first welding torch (10) is comprised of a laser unit (76) which, in the welding torch unit (29), is combined with the second welding torch (35) for the cold-metal transfer welding process.
7. A welding unit (27) according to any one of claims 1 to 6, characterized in that the first welding torch (10) precedes the second welding torch (35) in the welding direction.
8. A welding unit (27) according to any one of claims 1 to 7, characterized in that two separately controllable current sources (2, 38) are arranged in the welding apparatus (1) to supply the welding torch unit (29) with energy.

9. A welding unit (27) according to any one of claims 1 to 7, characterized in that only one current source (2) is arranged in the welding apparatus (1) to supply the welding torch unit (29) with energy, which current source is alternately connected with the respectively active welding torch (10, 35).
10. A welding unit (27) according to any one of claims 1 to 9, characterized in that the at least two welding torches (10, 35) comprise a common gas nozzle (37).
11. A welding unit (27) according to any one of claims 1 to 10, characterized in that the at least two welding torches (10, 35) of the welding torch unit (29) are laterally offset relative to one another in the longitudinal direction of the weld, i.e., in the welding direction.
12. A welding unit (27) according to any one of claims 1 to 11, characterized in that the welding wires (13, 32) of the at least two welding torches (10, 35) are comprised of different materials.
13. A welding unit (27) according to any one of claims 1 to 12, characterized in that the welding wires (13, 32) of the at least two welding torches (10, 35) have different diameters.
14. A welding method combining at least two different welding processes, characterized in that at least one welding process is comprised of a cold-metal transfer welding process, wherein a consumable welding wire is moved forward and backward, and that the at least two welding processes are synchronized in time.
15. A welding method according to claim 14, characterized in that a welding process is comprised of a MIG/MAG welding process.
16. A welding method according to claim 14, characterized in that a welding process is comprised of a WIG welding process.
17. A welding method according to claim 14, characterized in that a welding process is comprised of a plasma welding process.
18. A welding method according to claim 14, characterized in that at least two welding processes are comprised of a cold-metal transfer welding process.
19. A welding method according to claim 14, characterized in that a welding process is comprised of a laser welding process.
20. A welding method according to any one of claims 14 to 19, characterized in that the cold-metal transfer welding process follows the other welding process(es) in the welding direction.

21. A welding method according to any one of claims 14 to 20, characterized in that at least two welding processes using consumable welding wires are temporally synchronized in a manner that the droplet detachments from the welding wires of the at least two welding processes take place simultaneously.

22. A welding method according to any one of claims 14 to 20, characterized in that at least two welding processes using melting welding wires are temporally synchronized in a manner that the droplet detachment from the welding wire of one welding process takes place in a manner temporally offset relative to the droplet detachment of the other welding process(es).